

Nuclear Incident Communication Planning

Planning for a Nuclear Detonation

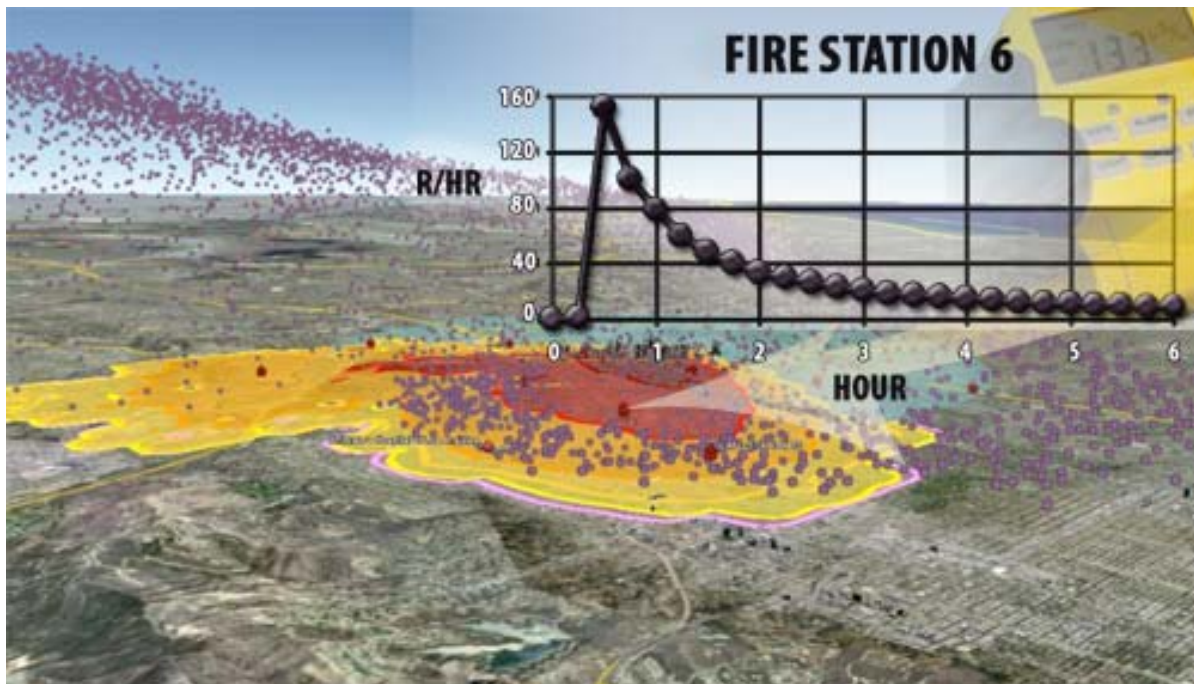
Congress directed the Department of Homeland Security's Office of Health Affairs to develop an improvised nuclear device (IND) communications response plan. OHA and FEMA conducted IND communications research with federal partners, scientists, and state and local stakeholders.

The research, which ranged from scientific modeling to focus groups in major U.S. cities, found that perceptions about IND threats are shaped by historical references to the Cold War.

Scientific analysis has shown that today's threat is different; potentially survivable for thousands, especially with adequate shelter and education. Spending the first few hours in a good shelter, such as the center of a multi-story building, can keep radiation exposure at a non-lethal level.

An IND blast is much smaller explosion than the strategic thermonuclear weapons of the Cold War, though people within a few miles of the blast could still be killed or injured.

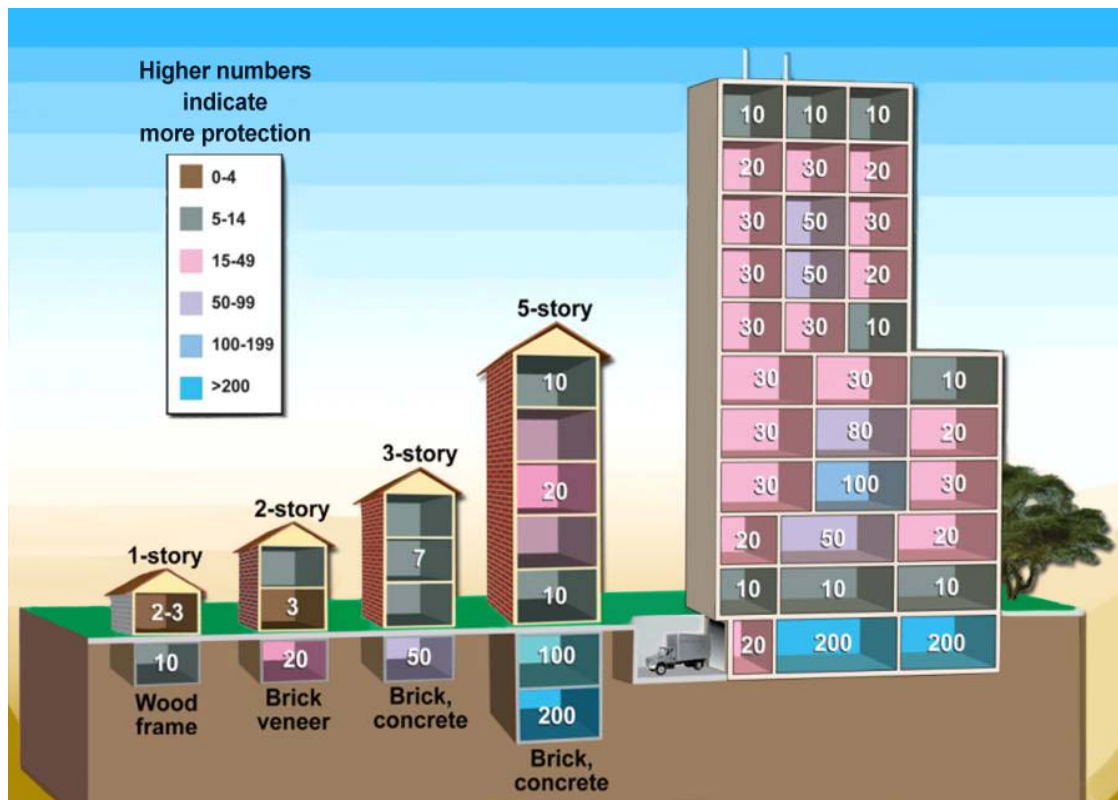
Fallout



A nuclear detonation creates a large cloud of radioactive dust and water vapor that falls back to earth contaminating horizontal surfaces. The visible dust and debris (pictured as oversized balls in this illustration) are the most dangerous particles in the fallout. Those particles, actually the size of table salt or sand, are most hazardous in the first few minutes and hours as they settle on the ground. Where these particles fall is often determined by wind speed and direction at several different levels of the atmosphere. These particles give off penetrating radiation that can injure people, even those in cars or inadequate shelters. The primary health hazard is external gamma radiation from fallout on horizontal surfaces. Breathing in fallout dust is only a minor concern. The good news is that fallout decays and radiation levels will decrease rapidly over the first few hours and days.

Preliminary Shelter/Evacuation Analysis

Today's IND threat is survivable for people who can seek early, adequate shelter before fallout arrives. Once in a shelter, optimum length of stay depends on the quality of the shelter and the time required to evacuate the area. If evacuation routes are blocked, staying in a shelter may provide the best protection. Spending the first hour in an urban shelter such as a multi-story building can keep radiation exposures at a non-lethal level. People should listen for instructions on the best evacuation routes to avoid going into areas with higher levels of contamination.



In the figure above, areas with a protection factor of 10 or higher are considered adequate, though even an inadequate shelter (such as one-story homes and cars) can significantly reduce exposure to fallout.

Given the daytime population density of a large modern city, the number that would be hurt by prompt effects of the blast or threatened by fallout particles could be in the hundreds of thousands. However, the number of casualties can be significantly reduced through community pre-event planning at the local level to educate citizens about appropriate response actions. The largest potential for reduction in casualties comes from reducing exposure to fallout radiation, which is accomplished by early, adequate sheltering followed by informed evacuation.

More research and analysis is underway. Your feedback is vital. Please share your thoughts by contacting the DHS Office of Health Affairs, at (202) 254-6479 or HealthAffairs@dhs.gov.